Questions/Requests for the Applicant:	Response
Please label the injection wells or the injection well site on Figure 2.	Complete
Was any data collected or testing performed during drilling of the 355-7R injection well? If so, please characterize this data.	During the drilling of 355-7R in 1973, the following characterizing logging measurements were obtained – Gamma Ray (GR), Spontaneous potential (SP), Resistivity (Dual induction laterlog), Density, Neutron Porosity and formation dip from 10,509' to 3,393', covering the Etchegoin, Reef Ridge and Monterey formations. In addition, 28 sidewall core samples were also obtained over the same interval, however no detailed analysis of the core samples was performed at the time.
The AoR and Corrective Action Plan (on pg. 3) states that, the "Monterey Formation sands are bound above by the regional Reef Ridge Shale, and below by the Lower Antelope Shale Member of the Monterey Formation." Please clarify the difference between the A2 Shale and the Lower Antelope Shale.	The A2 Shale lies directly beneath the Monterey Formation A1-A2 reservoir and provides hydraulic separation with the Monterey Formation A3-A11 reservoir. The Lower Antelope Shale is at the base of the Monterey Formation.
Does the Antelope Shale provide confinement? If so, please provide additional discussion of the confining properties.	The Lower Antelope Shale does not provide confinement for the Monterey Formation A1-A2 reservoir.
What is the source of the statement about the pressure differential between the Monterey A1- A2 Sands and the Monterey A3-A11 Sands described on pg. 10?	Figure 10.
Please provide pressure build-up test results for the 357-7R injection well.	Request technical discussion prior to inclusion in the preoperational testing plan.
Please provide pressure build-up test results for the 357-7k injection well.	Request technical discussion prior to inclusion in the preoperational testing plan.
Several of the figures in the narrative that contain data are difficult to read (e.g., Figures 14 and 15); please provide higher resolution versions of this information.	Complete
Please provide a map of the Elk Hills Oil Field that shows the 355-7R and 357-7R injection wells, along with the wells planned for the Elk Hills 26R Storage Project (with a scale that shows distances).	Complete - Figure 8
Faults and Fractures	
Please update Figure 10 to clearly label the formations in which the thrust faults terminate.	Complete
Where were the 66 oil samples collected within the EHOF described on pp 13-14, relative to faults within the field?	See Figure 2
Where the do on sumples concered within the Erior described on pp 15 24, relative to take within the neta.	See Figure 2
Depth, Areal Extent, and Thickness of the Injection and Confining Zones	
The depths listed in Table 1 for the Monterey A1-A2 Sands are inconsistent with the logs in Figure 9. It appears, based on the log, that the depth to the Monterey A1-A2 Sands is ~8,500 feet MD or ~7,700 feet TVD at the 357-7R injection well, not 8,403 feet TVD as stated in Table 1. The mean depth to the Monterey Formation is also listed as 5,907 ft when the low and high depths are listed as 8,403 ft and 9,589 ft respectively. Please clarify the discrepancy or revise Table 1.	Table 1 depths represents the distribution over the AoR and are in true vertical depth. The logs in figure 9 are annotated with measured depth and sub-sea true vertical depth. The 5,907 foot value in table has been updated.
There is a typo on Figure 16, "Capitally" for Mercury Injection Capillary Pressure. Please fix this when the application is updated.	Complete
Please characterize, name, and provide depth and permeability data for the underlying confining unit, if one exists.	See page 10
Hydrologic and Hydrogeologic Information	
It appears that Figure 26 provides information on the depth and regional extent of the area shown in cross section with wireline logs for TDS content, however the resolution is low (pg. 31). Please provide a higher resolution version of Figure 26.	Complete
What is the depth of the Upper Tulare Formation and the separation of this lowermost USDW from the injection zone and the confining zone within the AoR?	Page 34

tease provide clear/legible versions of the sample analyses in Figures 30 and 33 to allow a review of the sampling performed. Complete Page 40 P		
tease provide clear/legible versions of the sample analyses in Figures 30 and 31 to allow a review of the sampling performed. Complete Complete Page 40 What is the total dissolved solids (TDS) content of the Monterey Formation? Please indicate how many data points or measurements are valuable to support this reasourement (a. p. based on past field operations) and, if it they are not from throughout the AOR, please provide in the sampling performed to support a determination that the Monterey Formation is not a USDNU. any water quality data available for the Etchepion Formation? If they are not from throughout the AOR, please provide this included in preoperational testing plan. Included in preoperational testing plan. Included in preoperational testing plan. CITY will drill a now monitoring well. Baseline results will be included in preoperational testing plan. CITY will drill a now monitoring well. Baseline results will be included in preoperational testing plan. CITY will drill a now monitoring well. Baseline results will be included in preoperational testing plan. CITY will drill a now monitoring well. Baseline results will be included in preoperational testing plan. CITY will drill a now monitoring well. Baseline results will be included in preoperational testing plan. CITY will drill a now monitoring well. Baseline results will be included in preoperational testing plan. CITY will drill a now monitoring well. Baseline results will be included in preoperational testing plan. CITY will drill a now monitoring well. Baseline results will be included in preoperational testing plan. CITY will drill a now monitoring well. Baseline results will be included in preoperational testing plan. CITY will drill a now monitoring well. Baseline results will be included in preoperational testing plan. CITY will drill a now monitoring well. Baseline results will be included in preoperational testing plan. CITY will drill a now monitoring well. Baseline results will be included in preoperational testing plan	Is the Upper Tulare USDW present within the modeled AoR of the injection wells?	Yes, refer to page 34 and 35.
Rease application references core data from 13 wells on page 17. Or which wells does this refer and where are they located? of they are not from they are soluted throughout the Ask places describe that, "The final/maximum values for support ask places for the final/maximum values for support ask places for the final/maximum values for support ask places for the final/maximum values for support the Ask places described with the Monterey Formation? Places indicate how many data points or measurements are valuable for the fitch point formation? How pare not from throughout the Ask, please provide formation to support a determination that the Monterey formation? How pare not from throughout the Ask, please provide for the fitch page for the fitch p	The opportunities of the model	The state of the s
where is Well 381-1787 Page 40 Visat is the total dissolved solids (TDS) content of the Monterey Formation? Please indicate how many data points or measurements are valiable to support this measurement (i.e., based on past field operational and, if they are not from throughout the AoR, please provided from a determination that the Monterey Formation is not a USDW. In your water quality data available for the Etchegoin Formation? If so, please provide this analysis if is not the same as is provided in Figure 30. In the Testing and Monitoring Plan, CTV states that they obtained a baseline nearlysis for the 61W-8-8R well (apparently for the Tulare or monitoring well. Baseline results will be included in preoperational testing plan. CTV will drill a new monitoring well. Baseline results will be included in preoperational testing plan. CTV will drill a new monitoring well. Baseline results will be included in preoperational testing plan. CTV will drill a new monitoring well. Baseline results will be included in preoperational testing plan. CTV will drill a new monitoring well. Baseline results will be included in preoperational testing plan. CTV will drill a new monitoring well. Baseline results will be included in preoperational testing plan. CTV will drill a new monitoring well. Baseline results will be included in preoperational testing plan. CTV will drill a new monitoring well. Baseline results will be included in preoperational testing plan. CTV will drill a new monitoring well. Baseline results will be included in preoperational testing plan. CTV will drill a new monitoring well. Baseline results will be included in preoperational testing plan. CTV will drill a new monitoring well. Baseline results will be included in preoperational testing plan. CTV will drill a new monitoring well. Baseline results will be included in preoperational testing plan. CTV will drill a new monitoring well. Baseline results will be included in preoperational testing plan. CTV will drill a new monitoring well. Base	Geochemistry/Geochemical Data	
where is Well 381-1787 Page 40 Visat is the total dissolved solids (TDS) content of the Monterey Formation? Please indicate how many data points or measurements are valiable to support this measurement (i.e., based on past field operational and, if they are not from throughout the AoR, please provided from a determination that the Monterey Formation is not a USDW. In your water quality data available for the Etchegoin Formation? If so, please provide this analysis if is not the same as is provided in Figure 30. In the Testing and Monitoring Plan, CTV states that they obtained a baseline nearlysis for the 61W-8-8R well (apparently for the Tulare or monitoring well. Baseline results will be included in preoperational testing plan. CTV will drill a new monitoring well. Baseline results will be included in preoperational testing plan. CTV will drill a new monitoring well. Baseline results will be included in preoperational testing plan. CTV will drill a new monitoring well. Baseline results will be included in preoperational testing plan. CTV will drill a new monitoring well. Baseline results will be included in preoperational testing plan. CTV will drill a new monitoring well. Baseline results will be included in preoperational testing plan. CTV will drill a new monitoring well. Baseline results will be included in preoperational testing plan. CTV will drill a new monitoring well. Baseline results will be included in preoperational testing plan. CTV will drill a new monitoring well. Baseline results will be included in preoperational testing plan. CTV will drill a new monitoring well. Baseline results will be included in preoperational testing plan. CTV will drill a new monitoring well. Baseline results will be included in preoperational testing plan. CTV will drill a new monitoring well. Baseline results will be included in preoperational testing plan. CTV will drill a new monitoring well. Baseline results will be included in preoperational testing plan. CTV will drill a new monitoring well. Base		
what is the total dissolved solids (TDS) content of the Monterey Formation? Please indicate how many data points or measurements are valiable to support this measurement (i.e., based on past field operations) and, if they are not from throughout the AOR, please provide friends to support this measurement (i.e., based on past field operations) and, if they are not from throughout the AOR, please provide friends to support the Etchegoin Formation? If so, please provide this control of the Etchegoin Formation? If so, please provide this analysis if it in not the same as is provided in Figure 30. Segmentancial and Petrophysical Characterization Hease update Figure 23 to include base case pressure. Base case pressure is in the red line that is covered by the reduced Young's Modulus case. Hease discuss the selection of the base case parameter values (i.e., Young's Modulus, thickness, etc.) in the geomechanical modeling. Hease explain what is meant by "anneal discontinuities" in the discussion on page 23. Hease explain what is meant by "anneal discontinuities" in the discussion on page 23. Hease explain what is meant by "anneal discontinuities" in the discussion on page 23. Hease explain what is meant by "anneal discontinuities" in the discussion on page 23. He application references core data from 13 wells on page 17. o To which wells does this refer and where are they located? of if they are not list instituted throughout the AOR, please describe how they are representative of the entire area that will be affected by injection. Where are the 18 wells that are the source of ductility data referred to on pg. 23 located? Here are the 18 wells that are the source of ductility data referred to on pg. 23 located? Here are the 18 wells that are the source of ductility data referred to on pg. 23 located? Here are the 18 wells that are the source of ductility data referred to on pg. 23 located? Here are the 18 wells that are the source of ductility data referred to on pg. 23 located? Here are the 18 wells that	Please provide clear/legible versions of the sample analyses in Figures 30 and 31 to allow a review of the sampling performed.	Complete
what is the total dissolved solids (TDS) content of the Monterey Formation? Please indicate how many data points or measurements are valiable to support this measurement (i.e., based on past field operations) and, if they are not from throughout the AOR, please provide friends to support this measurement (i.e., based on past field operations) and, if they are not from throughout the AOR, please provide friends to support the Etchegoin Formation? If so, please provide this control of the Etchegoin Formation? If so, please provide this analysis if it in not the same as is provided in Figure 30. Segmentancial and Petrophysical Characterization Hease update Figure 23 to include base case pressure. Base case pressure is in the red line that is covered by the reduced Young's Modulus case. Hease discuss the selection of the base case parameter values (i.e., Young's Modulus, thickness, etc.) in the geomechanical modeling. Hease explain what is meant by "anneal discontinuities" in the discussion on page 23. Hease explain what is meant by "anneal discontinuities" in the discussion on page 23. Hease explain what is meant by "anneal discontinuities" in the discussion on page 23. Hease explain what is meant by "anneal discontinuities" in the discussion on page 23. He application references core data from 13 wells on page 17. o To which wells does this refer and where are they located? of if they are not list instituted throughout the AOR, please describe how they are representative of the entire area that will be affected by injection. Where are the 18 wells that are the source of ductility data referred to on pg. 23 located? Here are the 18 wells that are the source of ductility data referred to on pg. 23 located? Here are the 18 wells that are the source of ductility data referred to on pg. 23 located? Here are the 18 wells that are the source of ductility data referred to on pg. 23 located? Here are the 18 wells that are the source of ductility data referred to on pg. 23 located? Here are the 18 wells that	Where is Well 381-17R?	Page 40
valiable to support this measurement (i.e., based on past field operations) and, if they are not from throughout the AoR, please provide information is support a determination that the Monterry Formation is not a USOW. In any water quality data available for the Etchegoin formation 150, please provide this included in preoperational testing plan. Included in p		
Information to support a determination that the Monterey Formation is not a USDW. In any water quality data available for the Etchegoin Formation? If so, please provide this In the Testing and Monitoring Plan, CTV states that they obtained a baseline analysis for the 61WS-8R well (apparently for the Tulare manadion). Please provide this analysis if it is not the same as is provided in Figure 30. Exemperating and Monitoring Plan, CTV states that they obtained a baseline analysis for the 61WS-8R well (apparently for the Tulare manadion). Please provide this analysis if it is not the same as is provided in Figure 30. Exemperating and Monitoring Plan, CTV states that they obtained a baseline analysis for the 61WS-8R well (apparently for the Tulare manadion). Please provide this analysis if it is not the same as is provided in Figure 30. Exemperating and Monitoring Plan, CTV states that they obtained a baseline analysis for the 61WS-8R well (apparently for the Tulare manadion). Please provide this analysis if it is not the same as is provided in Figure 30. The same explain what is meant by "anneal discontinuities" in the discussion on page 23. Uncompacted, low-density shales are extremely ductile and can thus accommodate large amounts of strain without undergoing brittle failure and loss of top seal integrity. The application references core data from 13 wells on page 17. o To which wells does this refer and where are they located? of If they are not the strip of the page and the same provided in properation of the same provided in properation and the same provided in Figure 24. The tensile failure for Reef Ridge is 7,500PSI based on geomechanical modeling. The sources of data used to determine failure pressure, fracture pressure, and fracture gradient i	What is the total dissolved solids (TDS) content of the Monterey Formation? Please indicate how many data points or measurements are	Page 40
is any water quality data available for the Etchegoln Formation? If so, please provide this the Testing and Monitoring Plan, CTV states that they obtained a baseline analysis for the 61WS-SR well (apparently for the Tulare ormation). Please provide this analysis if it is not the same as is provided in Figure 30. **Beauchanical and Petrophysical Characterization** **Base case pressure is in the red line that is covered by the reduced Young's Modulus case.** **Base case pressure is in the red line that is covered by the reduced Young's Modulus case.** **Base case pressure is in the red line that is covered by the reduced Young's Modulus case.** **Base case pressure is in the red line that is covered by the reduced Young's Modulus case.** **Base case pressure is in the red line that is covered by the reduced Young's Modulus case.** **Base case pressure is in the red line that is covered by the reduced Young's Modulus case.** **Base case pressure is in the red line that is covered by the reduced Young's Modulus case.** **Base case pressure is in the red line that is covered by the reduced Young's Modulus case.** **Base case pressure is in the red line that is covered by the reduced Young's Modulus case.** **Base case pressure is in the red line that is covered by the reduced Young's Modulus case.** **Base case pressure is in the red line that is covered by the reduced Young's Modulus case.** **Uncompacted, low-density shales are extremely ductile and can thus accommodate large amounts of strain without undergoing brittle failure and loss of top seal integrity.** **Base case pressure is in the red line that is covered by the reduced Young's Modulus case.** **Uncompacted, low-density shales are extremely ductile and can thus accommodate large amounts of strain without undergoing brittle failure and loss of top seal integrity.** **Base case pressure is in the red line that is covered by the reduced Young's Modulus case.** **Uncompacted, low-density shales are extremely ductile and can thus accommodat		
the Testing and Monitoring Plan, CTV states that they obtained a baseline analysis for the 61WS-8R well (apparently for the Tulare ormation). Please provide this analysis if it is not the same as is provided in Figure 30. **Bernachanical and Petrophysical Characterization** **Bese case pressure.** **Base case pressure is in the red line that is covered by the reduced Young's Modulus case.** **Base case pressure is in the red line that is covered by the reduced Young's Modulus case.** **Base case pressure is in the red line that is covered by the reduced Young's Modulus case.** **Base case pressure is in the red line that is covered by the reduced Young's Modulus case.** **Base case pressure is in the red line that is covered by the reduced Young's Modulus case.** **Base case pressure is in the red line that is covered by the reduced Young's Modulus case.** **Base case pressure is in the red line that is covered by the reduced Young's Modulus case.** **Base case pressure is in the red line that is covered by the reduced Young's Modulus case.** **Base case pressure is in the red line that is covered by the reduced Young's Modulus case.** **Base case pressure is in the red line that is covered by the reduced Young's Modulus case.** **Base case pressure is in the red line that is covered by the reduced Young's Modulus case.** **Base case pressure is in the red line that is covered by the reduced Young's Modulus case.** **Base case pressure is in the red line that is covered by the reduced Young's Modulus case.** **Base case pressure is in the red line that is covered by the reduced Young's Modulus case.** **Base case pressure is in the red line that is covered by the reduced Young's Modulus case.** **Uncompacted, low-density shales are extremely ductile and can thus accommodate large amounts of strain without undergoing brittle failure and loss of top seal integrity.** **Uncompacted, low-density shales are extremely ductile and can thus accommodate large amounts of strain without undergoing britt	information to support a determination that the Monterey Formation is not a USDW.	
the Testing and Monitoring Plan, CTV states that they obtained a baseline analysis for the 61W5-8R well (apparently for the Tulare comaton). Please provide this analysis if it is not the same as is provided in Figure 30. **Beomechanical and Petrophysical Characterization** **Bease update Figure 23 to include base case pressure. **Bease discuss the selection of the base case parameter values (i.e., Young's Modulus, thickness, etc.) in the geomechanical modeling. **Bease explain what is meant by "anneal discontinuities" in the discussion on page 23. **Bease explain what is meant by "anneal discontinuities" in the discussion on page 23. **Bease explain what is meant by "anneal discontinuities" in the discussion on page 23. **Bease explain what is meant by "anneal discontinuities" in the discussion on page 23. **Bease explain what is meant by "anneal discontinuities" in the discussion on page 23. **Bease explain what is meant by "anneal discontinuities" in the discussion on page 23. **Bease explain what is meant by "anneal discontinuities" in the discussion on page 23. **Bease explain what is meant by "anneal discontinuities" in the discussion on page 23. **Bease explain what is meant by "anneal discontinuities" in the discussion on page 23. **Bease explain what is meant by "anneal discontinuities" in the discussion on page 23. **Bease explain what is meant by "anneal discontinuities" in the discussion on page 23. **Bease explain what is meant by "anneal discontinuities" in the discussion on page 23. **Bease explain what is meant by "anneal discontinuities" in the discussion on page 23. **Bease explain what is meant by "anneal discontinuities" in the discussion on page 27. **Bease explain what is meant by "anneal discontinuities" in the discussion on page 27. **Bease explain what is meant by "anneal discontinuities" in the discussion on page 27. **Bease explain what is meant by "anneal discontinuities" in the discussion on page 27. **Bease explain what is meant by "anneal discontinuities" in th	Is any water quality data available for the Etchegoin Formation? If so, please provide this	Included in preoperational testing plan.
testing plan. testin	, , ,	, , , , ,
lease update Figure 23 to include base case pressure. See page 28 and 29. Uncompacted, low-density shales are extremely ductile and can thus accommodate large amounts of strain without undergoing brittle failure and loss of top seal integrity. He application references core data from 13 wells on page 17. o To which wells does this refer and where are they located? of If they are not istributed throughout the AoR, please describe how they are representative of the entire area that will be affected by injection. Understand the Class II permitted fracture gradients of 8 psi/foot," and that, "the final reservoir pressure target of 4,000 PSI is esourced of data used to determine failure pressure, facture pressure, and fracture gradient. Alineralogy of the Injection and Confining Zones desse provide a map of the 9 well locations used for XRD described on pages 16-17. What evidence is there for depositional continuity and facles consistency within the EHOF, as described on page 17? See Figure 19. See Figure 19. The tensile failure for Reef Ridge is 7,500PSI based on geomechanical modeling. The Read Ridge Shale confining layer fracture gradient is 0.82 based on a test in 327-78- RDJ. See Figure 19. See Figure 19. See Figure 19. The tensile failure for Reef Ridge is 7,500PSI based an geomechanical modeling. The Read Ridge Shale confining layer fracture gradient is 0.82 based on a test in 327-78- RDJ. See Table 3 and page 26. See Figure 19.	In the Testing and Monitoring Plan, CTV states that they obtained a baseline analysis for the 61WS-8R well (apparently for the Tulare	, ,
lease update Figure 23 to include base case pressure. Base case pressure is in the red line that is covered by the reduced Young's Modulus case. See page 28 and 29. Uncompacted, low-density shales are extremely ductile and can thus accommodate large amounts of strain without undergoing brittle failure and loss of top seal integrity. The application references core data from 13 wells on page 17. o To which wells does this refer and where are they located? o if they are not listributed throughout the AOR, please describe how they are representative of the entire area that will be affected by injection. Where are the 18 wells that are the source of ductility data referred to on pg. 23 located? The application states that, "The final/maximum values for surface and downhole injection pressures are far below ("2,000 psi) those sociated with the Class II permitted fracture gradients of .5 psi/fox," and that, "the final reservoir pressure target of 4,000 PSI is grifflently below the Reef Ridge confining shale strained minimum geomechanical milar pressure of "7,500 PSI" (pg. 46). Please darfy he sources of data used to determine failure pressure, fracture gradient. What evidence is there for depositional continuity and facles consistency within the EHOF, as described on page 17? What evidence is there for depositional continuity and facles consistency within the EHOF, as described on page 17? Lessinc History and Seismic Risk Updated Updated	Formation). Please provide this analysis if it is not the same as is provided in Figure 30.	testing plan.
lease update Figure 23 to include base case pressure. Base case pressure is in the red line that is covered by the reduced Young's Modulus case. See page 28 and 29. Uncompacted, low-density shales are extremely ductile and can thus accommodate large amounts of strain without undergoing brittle failure and loss of top seal integrity. The application references core data from 13 wells on page 17. o To which wells does this refer and where are they located? o if they are not listributed throughout the AOR, please describe how they are representative of the entire area that will be affected by injection. Where are the 18 wells that are the source of ductility data referred to on pg. 23 located? The application states that, "The final/maximum values for surface and downhole injection pressures are far below ("2,000 psi) those sociated with the Class II permitted fracture gradients of .5 psi/fox," and that, "the final reservoir pressure target of 4,000 PSI is grifflently below the Reef Ridge confining shale strained minimum geomechanical milar pressure of "7,500 PSI" (pg. 46). Please darfy he sources of data used to determine failure pressure, fracture gradient. What evidence is there for depositional continuity and facles consistency within the EHOF, as described on page 17? What evidence is there for depositional continuity and facles consistency within the EHOF, as described on page 17? Lessinc History and Seismic Risk Updated Updated	Geomechanical and Petrophysical Characterization	1
lease discuss the selection of the base case parameter values (i.e., Young's Modulus, thickness, etc.) in the geomechanical modeling. See page 28 and 29. Uncompacted, low-density shales are extremely ductile and can thus accommodate large amounts of strain without undergoing brittle failure and loss of top seal integrity. The application references core data from 13 wells on page 17. o To which wells does this refer and where are they located? o If they are not list instituted throughout the AoR, please describe how they are representative of the entire area that will be affected by injection. Where are the 18 wells that are the source of ductility data referred to on pg. 23 located? See Figure 19. See Figure 19. The transification failure for Reef Ridge is 7,500PSI based on geomechanical modeling. The Resoluted with the Class II permitted fracture gradients of .8 psi/foot," and that, "the final reservoir pressure are far below ("2,000 psi) is grifted with the Class II permitted fracture gradients of .8 psi/foot," and that, "the final reservoir pressure are far below ("2,000 psi) is grifted below the Reef Ridge confining shale estimated minimum geomechanical mideling. The Reef Ridge confining shale estimated minimum geomechanical mideling. The Reef Ridge foother facture gradient is 0.82 based on a test in 327-78. R01. See table 3 and page 26. What evidence is there for depositional continuity and facies consistency within the EHOF, as described on page 17? See Figure 16 and page 17 text. Updated Updated	Sconiccianical and i ecrophysical characterization	
lease discuss the selection of the base case parameter values (i.e., Young's Modulus, thickness, etc.) in the geomechanical modeling. See page 28 and 29. Uncompacted, low-density shales are extremely ductile and can thus accommodate large amounts of strain without undergoing brittle failure and loss of top seal integrity. The application references core data from 13 wells on page 17. o To which wells does this refer and where are they located? o If they are not listributed throughout the AoR, please describe how they are representative of the entire area that will be affected by injection. Where are the 18 wells that are the source of ductility data referred to on pg. 23 located? See Figure 19. The tensile failure for Reef Ridge is 7,500PSI based on geomechanical modeling. The Reef Ridge Shale confining layer fracture gradients of .8 psi/foot,* and that, 'the final reservoir pressure target of 4,000 PSI is gindificantly below the Reef Ridge confining shale estimated minimum geomechanical failure pressure of "7,500 PSI" (pg. 46). Please clarify he sources of data used to determine failure pressure, and fracture gradient. Alineralogy of the Injection and Confining Zones Rese provide a map of the 9 well locations used for XRD described on pages 16-17. See Figure 15. See Figure 16 and page 17 text. See Figure 16 and page 17 text. See Figure 16 and page 17 text.	Please update Figure 23 to include base case pressure.	Base case pressure is in the red line that is covered by the reduced Young's Modulus
lease explain what is meant by "anneal discontinuities" in the discussion on page 23. Uncompacted, low-density shales are extremely ductile and can thus accommodate large amounts of strain without undergoing brittle failure and loss of top seal integrity. The application references core data from 13 wells on page 17. o To which wells does this refer and where are they located? of If they are not istributed throughout the AoR, please describe how they are representative of the entire area that will be affected by injection. Where are the 18 wells that are the source of ductility data referred to on pg. 23 located? The application states that, "The final/maximum values for surface and downhole injection pressures are far below ("2,000 psi) those sociated with the Class II permitted fracture gradients of .8 psi/foot," and that, "the final reservoir pressure target of 4,000 PSI is grifficantly below the Reef Ridge confining shale estimated minimum geomechanical failure pressure or "7,500 PSI" (pg. 46). Please clarify he sources of data used to determine failure pressure, and fracture gradient. Alineralogy of the Injection and Confining Zones Please provide a map of the 9 well locations used for XRD described on pages 16-17. What evidence is there for depositional continuity and facies consistency within the EHOF, as described on page 17? See Figure 17. See Figure 16 and page 17 text. See Figure 16 and page 17 text.		case.
lease explain what is meant by "anneal discontinuities" in the discussion on page 23. Uncompacted, low-density shales are extremely ductile and can thus accommodate large amounts of strain without undergoing brittle failure and loss of top seal integrity. The application references core data from 13 wells on page 17. o To which wells does this refer and where are they located? of If they are not istributed throughout the AoR, please describe how they are representative of the entire area that will be affected by injection. Where are the 18 wells that are the source of ductility data referred to on pg. 23 located? The application states that, "The final/maximum values for surface and downhole injection pressures are far below ("2,000 psi) those sociated with the Class II permitted fracture gradients of .8 psi/foot," and that, "the final reservoir pressure target of 4,000 PSI is grifficantly below the Reef Ridge confining shale estimated minimum geomechanical failure pressure or "7,500 PSI" (pg. 46). Please clarify he sources of data used to determine failure pressure, and fracture gradient. Alineralogy of the Injection and Confining Zones Please provide a map of the 9 well locations used for XRD described on pages 16-17. What evidence is there for depositional continuity and facies consistency within the EHOF, as described on page 17? See Figure 17. See Figure 16 and page 17 text. See Figure 16 and page 17 text.		Con war 20 and 20
he application references core data from 13 wells on page 17. o To which wells does this refer and where are they located? o If they are not listributed throughout the AoR, please describe how they are representative of the entire area that will be affected by injection. Where are the 18 wells that are the source of ductility data referred to on pg. 23 located? See Figure 19. The tensile failure for Reef Ridge is 7,500PSI based on geomechanical modeling. The sources of data used to determine failure pressure, fracture pressure, and fracture gradient. Alineralogy of the Injection and Confining Zones What evidence is there for depositional continuity and facies consistency within the EHOF, as described on page 17? What evidence is there for depositional continuity and facies consistency within the EHOF, as described on page 17? Lesse include all earthquakes of magnitude 3.0 and above in Figure 24.	Please discuss the selection of the base case parameter values (i.e., Young's Modulus, thickness, etc.) in the geomechanical modeling.	See page 28 and 29.
he application references core data from 13 wells on page 17. o To which wells does this refer and where are they located? o If they are not listributed throughout the AoR, please describe how they are representative of the entire area that will be affected by injection. Where are the 18 wells that are the source of ductility data referred to on pg. 23 located? See Figure 19. The tensile failure for Reef Ridge is 7,500PSI based on geomechanical modeling. The sources of data used to determine failure pressure, fracture pressure, and fracture gradient. Alineralogy of the Injection and Confining Zones What evidence is there for depositional continuity and facies consistency within the EHOF, as described on page 17? What evidence is there for depositional continuity and facies consistency within the EHOF, as described on page 17? Lesse include all earthquakes of magnitude 3.0 and above in Figure 24.		
he application references core data from 13 wells on page 17. o To which wells does this refer and where are they located? o If they are not listributed throughout the AOR, please describe how they are representative of the entire area that will be affected by injection. Where are the 18 wells that are the source of ductility data referred to on pg. 23 located? Where are the 18 wells that are the source of ductility data referred to on pg. 23 located? See Figure 19. The tensile failure for Reef Ridge is 7,500PSI based on geomechanical modeling. The Reef Ridge confining shale estimated minimum geomechanical failure pressure target of 4,000 PSI is glorated to determine failure pressure, fracture gradient. Alineralogy of the Injection and Confining Zones Hease provide a map of the 9 well locations used for XRD described on pages 16-17. What evidence is there for depositional continuity and facies consistency within the EHOF, as described on page 17? See Figure 16 and page 17 text. Updated Hease include all earthquakes of magnitude 3.0 and above in Figure 24.	Please explain what is meant by "anneal discontinuities" in the discussion on page 23.	Uncompacted, low-density shales are extremely ductile and can thus accommodate
Where are the 18 wells that are the source of ductility data referred to on pg. 23 located? See Figure 19. The tangelication states that, "The final/maximum values for surface and downhole injection pressures are far below (~2,000 psi) those sociated with the class II permitted fracture gradients of .8 psi/foot," and that, "the final reservoir pressure target of 4,000 PSI is lightly below the Reef Ridge confining shale estimated minimum geomechanical failure pressure of ~7,500 PSI" (pg. 46). Please clarify he sources of data used to determine failure pressure, and fracture gradient. Alineralogy of the Injection and Confining Zones Please provide a map of the 9 well locations used for XRD described on pages 16-17. What evidence is there for depositional continuity and facies consistency within the EHOF, as described on page 17? See Figure 19. The tensile failure for Reef Ridge is 7,500PSI based on geomechanical modeling. The Reef Ridge Shale confining layer fracture pressure will be addressed in preoperational testing. The Montreey Formation fracture gradient is 0.82 based on a test in 327-7R. RD1. See table 3 and page 26. What evidence is there for depositional continuity and facies consistency within the EHOF, as described on page 17? See Figure 17. See Figure 16 and page 17 text.		large amounts of strain without undergoing brittle failure and loss of top seal integrity.
Where are the 18 wells that are the source of ductility data referred to on pg. 23 located? See Figure 19. The tangelication states that, "The final/maximum values for surface and downhole injection pressures are far below (~2,000 psi) those sociated with the class II permitted fracture gradients of .8 psi/foot," and that, "the final reservoir pressure target of 4,000 PSI is lightly below the Reef Ridge confining shale estimated minimum geomechanical failure pressure of ~7,500 PSI" (pg. 46). Please clarify he sources of data used to determine failure pressure, and fracture gradient. Alineralogy of the Injection and Confining Zones Please provide a map of the 9 well locations used for XRD described on pages 16-17. What evidence is there for depositional continuity and facies consistency within the EHOF, as described on page 17? See Figure 19. The tensile failure for Reef Ridge is 7,500PSI based on geomechanical modeling. The Reef Ridge Shale confining layer fracture pressure will be addressed in preoperational testing. The Montreey Formation fracture gradient is 0.82 based on a test in 327-7R. RD1. See table 3 and page 26. What evidence is there for depositional continuity and facies consistency within the EHOF, as described on page 17? See Figure 17. See Figure 16 and page 17 text.		
Where are the 18 wells that are the source of ductility data referred to on pg. 23 located? See Figure 19. The tangelication states that, "The final/maximum values for surface and downhole injection pressures are far below (~2,000 psi) those sociated with the class II permitted fracture gradients of .8 psi/foot," and that, "the final reservoir pressure target of 4,000 PSI is lightly below the Reef Ridge confining shale estimated minimum geomechanical failure pressure of ~7,500 PSI" (pg. 46). Please clarify he sources of data used to determine failure pressure, and fracture gradient. Alineralogy of the Injection and Confining Zones Please provide a map of the 9 well locations used for XRD described on pages 16-17. What evidence is there for depositional continuity and facies consistency within the EHOF, as described on page 17? See Figure 19. The tensile failure for Reef Ridge is 7,500PSI based on geomechanical modeling. The Reef Ridge Shale confining layer fracture pressure will be addressed in preoperational testing. The Montreey Formation fracture gradient is 0.82 based on a test in 327-7R. RD1. See table 3 and page 26. What evidence is there for depositional continuity and facies consistency within the EHOF, as described on page 17? See Figure 17. See Figure 16 and page 17 text.	The application references core data from 13 wells on page 17, o To which wells does this refer and where are they located? o If they are not	Updated Figure 22.
The tensile failure for Reef Ridge is 7,500PSI based on geomechanical modeling. The Reef Ridge Confining shale estimated minimum geomechanical failure pressure are far below (~2,000 pSI) is testing ficantly below the Reef Ridge confining shale estimated minimum geomechanical failure pressure of ~7,500 PSI" (pg. 46). Please clarify he sources of data used to determine failure pressure, and fracture gradient. The tensile failure for Reef Ridge is 7,500PSI based on geomechanical modeling. The Reef Ridge Shale confining layer fracture pressure will be addressed in preoperational testing. The Monterey Formation fracture gradient is 0.82 based on a test in 327-78-RD1. See table 3 and page 26. Aliese provide a map of the 9 well locations used for XRD described on pages 16-17. What evidence is there for depositional continuity and facies consistency within the EHOF, as described on page 17? See Figure 16 and page 17 text. See Figure 16 and page 17 text. Lipitated Li	distributed throughout the AoR, please describe how they are representative of the entire area that will be affected by injection.	
The tensile failure for Reef Ridge is 7,500PSI based on geomechanical modeling. The Reef Ridge Confining shale estimated minimum geomechanical failure pressure are far below (~2,000 pSI) is testing ficantly below the Reef Ridge confining shale estimated minimum geomechanical failure pressure of ~7,500 PSI" (pg. 46). Please clarify he sources of data used to determine failure pressure, and fracture gradient. The tensile failure for Reef Ridge is 7,500PSI based on geomechanical modeling. The Reef Ridge Shale confining layer fracture pressure will be addressed in preoperational testing. The Monterey Formation fracture gradient is 0.82 based on a test in 327-78-RD1. See table 3 and page 26. Aliese provide a map of the 9 well locations used for XRD described on pages 16-17. What evidence is there for depositional continuity and facies consistency within the EHOF, as described on page 17? See Figure 16 and page 17 text. See Figure 16 and page 17 text. Lipitated Li		
The tensile failure for Reef Ridge is 7,500PSI based on geomechanical modeling. The Reef Ridge Confining shale estimated minimum geomechanical failure pressure are far below (~2,000 pSI) is testing ficantly below the Reef Ridge confining shale estimated minimum geomechanical failure pressure of ~7,500 PSI" (pg. 46). Please clarify he sources of data used to determine failure pressure, and fracture gradient. The tensile failure for Reef Ridge is 7,500PSI based on geomechanical modeling. The Reef Ridge Shale confining layer fracture pressure will be addressed in preoperational testing. The Monterey Formation fracture gradient is 0.82 based on a test in 327-78-RD1. See table 3 and page 26. Aliese provide a map of the 9 well locations used for XRD described on pages 16-17. What evidence is there for depositional continuity and facies consistency within the EHOF, as described on page 17? See Figure 16 and page 17 text. See Figure 16 and page 17 text. Lipitated Li		
Reef Ridge Shale confining layer fracture pressure will be addressed in preoperational testing. The Monterey Formation fracture gradient is 0.82 based on a test in 327-78-801. See table 3 and page 26. Mineralogy of the Injection and Confining Zones Please provide a map of the 9 well locations used for XRD described on pages 16-17. What evidence is there for depositional continuity and facies consistency within the EHOF, as described on page 17? See Figure 16 and page 17 text. See Figure 16 and page 17 text. See Figure 16 and page 17 text. Updated	where are the 18 wells that are the source of ductility data referred to on pg. 23 located?	See Figure 19.
testing. The Monterey Formation fracture gradient is 0.82 based on a test in 327-7R-RD1. See table 3 and page 26. Mineralogy of the Injection and Confining Zones Please provide a map of the 9 well locations used for XRD described on pages 16-17. What evidence is there for depositional continuity and facies consistency within the EHOF, as described on page 17? See Figure 16 and page 17 text. See Figure 16 and page 17 text. Updated	The application states that, "The final/maximum values for surface and downhole injection pressures are far below (~2,000 psi) those	The tensile failure for Reef Ridge is 7,500PSI based on geomechanical modeling. The
Mineralogy of the Injection and Confining Zones Please provide a map of the 9 well locations used for XRD described on pages 16-17. What evidence is there for depositional continuity and facies consistency within the EHOF, as described on page 17? See Figure 16 and page 17 text. See Figure 16 and page 17 text. Please include all earthquakes of magnitude 3.0 and above in Figure 24.	associated with the Class II permitted fracture gradients of .8 psi/foot," and that, "the final reservoir pressure target of 4,000 PSI is	Reef Ridge Shale confining layer fracture pressure will be addressed in preoperational
Mineralogy of the Injection and Confining Zones Please provide a map of the 9 well locations used for XRD described on pages 16-17. What evidence is there for depositional continuity and facies consistency within the EHOF, as described on page 17? See Figure 17. See Figure 16 and page 17 text.	significantly below the Reef Ridge confining shale estimated minimum geomechanical failure pressure of ~7,500 PSI" (pg. 46). Please clarify	, ,
Please provide a map of the 9 well locations used for XRD described on pages 16-17. See Figure 17. See Figure 17. See Figure 16 and page 17 text.	the sources of data used to determine failure pressure, fracture pressure, and fracture gradient.	RD1. See table 3 and page 26.
Please provide a map of the 9 well locations used for XRD described on pages 16-17. See Figure 17. See Figure 17. See Figure 16 and page 17 text.		
Please provide a map of the 9 well locations used for XRD described on pages 16-17. See Figure 17. See Figure 17. See Figure 16 and page 17 text. Seismic History and Seismic Risk Please include all earthquakes of magnitude 3.0 and above in Figure 24. Updated	Mineralogy of the Injection and Confining Zones	
Vhat evidence is there for depositional continuity and facies consistency within the EHOF, as described on page 17? See Figure 16 and page 17 text. Seismic History and Seismic Risk Please include all earthquakes of magnitude 3.0 and above in Figure 24. Updated		
Seismic History and Seismic Risk Please include all earthquakes of magnitude 3.0 and above in Figure 24. Updated	Please provide a map of the 9 well locations used for XRD described on pages 16-17.	See Figure 17.
Seismic History and Seismic Risk Please include all earthquakes of magnitude 3.0 and above in Figure 24. Updated	What avidance is there for denositional continuity and facios consistency within the EUOE as described on need 173	Son Eigure 16 and nage 17 text
Please include all earthquakes of magnitude 3.0 and above in Figure 24. Updated	venact evidence is there for depositional continuity and racies consistency within the EHOF, as described on page 17?	See rigure 10 dilu page 17 text.
Please include all earthquakes of magnitude 3.0 and above in Figure 24. Updated	Seismic History and Seismic Risk	
o inform an evaluation and documentation that there is no significant seismic risk, EPA recommends that CTV describe how the project: See page 31 and 32	Please include all earthquakes of magnitude 3.0 and above in Figure 24.	Updated
o mitorin an evaluation and documentation that there is no significant seismic risk, cra recommends that civ describe now the project:	To inform an avaluation and documentation that there is no significant seignic yield EDA recommended that CTV describe have the available	See page 21 and 22
	To inform an evaluation and documentation that there is no significant seismic risk, EPA recommends that CTV describe how the project:	See hake 31 qua 32
has a geologic system free of known faults and fractures and capable of receiving and containing the volumes of CO2 proposed to	has a geologic system free of known faults and fractures and capable of receiving and containing the volumes of CO2 proposed to	1
be injected.	be injected.	

will be operated and monitored in a manner that will limit risk of endangerment to USDWs, including risks associated with induced	
seismic events;	
will be operated and monitored in a way that in the unlikely event of an induced event, risks will be quickly addressed and mitigated;	
and	
poses a low risk of inducing a felt seismic event.	
Facies Changes in the Injection or Confining Zones	
Please clarify what data sources were used to determine inputs for the geomodel where applicable, e.g., the inputs for sand vs. shale facies	See Figure 16 and page 17 text.
as discussed on pg. 40.	
Please also discuss how a sufficient number and distribution of formation characterization data are available to demonstrate a lack of local	See Figure 16 and page 17 text.
heterogeneities that could affect storage or confinement of CO2.	
	0 5: 40
Please specify the names, number, and locations of wells used to characterize formation thicknesses for the maps in Figure 13.	See Figure 16
CO3 Starone Compatibility with Subsystem Fluids and Minagels	
CO2 Stream Compatibility with Subsurface Fluids and Minerals	
Please provide evidence for the statement in the Application on page 39 that the quartz and feldspar in the Monterey A1-A2 Sands are stable	Included in average street to all testing along
in the presence of CO2 and carbonic acid?	included in preoperational testing plan.
In the presence of CO2 and carbonic actur	
Please elaborate on why use of the Peng-Robinson Equation of State supports compatibility of the CO2 with any fluid which may be	Due to the extremely low permeability of the Reef Ridge Shale (< 0.01mD) and the high
contained within the Reef Ridge Shale.	capillary entry pressure (4,220psi), the Peng Robinson Equation of State based
Contained within the Neer Nige Shale.	simulation is valid to model the project over the expected reservoir pressure range of
	250 – 4,000psi as there should be no entry of the CO2 injectate into the Reef Ridge.
	230 - 4,000psi as there should be no entry of the CO2 injectate into the Reel Ridge.
Confining Zone Integrity	
<u>comming cone megney</u>	
Were any other tests performed to corroborate pressure measurements in the Reef Ridge Shale?	Included in preoperational testing plan.
The state of the state personner to correspond to pressure measurements in the fact mage state.	
The application, on pg. 14, states that there is a pressure differential of 1,300 psi between the overlying Etchegoin Formation and Monterey	See Figure 13.
Formation due to the sealing nature of the Reef Ridge Shale. What is the source of the pressure data for this statement?	
- Same and the second state of the pressure and the press	